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ABSTRACT

Most children's books are filled with pictures, yet when schools design curricula to teach writing, they often ignore the role of visual images in the writing process. Historically, methods for teaching writing have focused on text. Even relatively recent techniques like brainstorming and story webbing still focus on verbal information. In some cases, however, visuals have been used as a story stimulus to generate writing ideas or evoke emotional expression. This paper describes a study which sought to measure the effects of the introduction of computer clip art and graphical presentation software on the writing process. In particular, researchers wondered if the use of these visuals would affect length and quality of compositions, student motivation and esteem, student ability to organize thoughts into paragraphs, and student reaction to sharing compositions. The study examined 25 second-graders engaged in a daily writer's workshop that included brainstorming, story webbing, drafting, editing, publishing, and presenting. Data was collected via observation, a final group debriefing, interviews with both teachers and students, and analysis of the final creative papers themselves. Children used clip art as icons as aids for mapping sequences and chronologies, and as trial-and-error aids in story planning. Many students had difficulty applying themselves to the writing process once they learned that a computer would assist them at the editing stage, but the computer's presence also lent fun to preparing the final draft, which can become mundane or frustrating. Graphical presentation software also took some of the anxiety out of sharing papers with the whole class; attention was drawn away from the child to the onscreen graphics. There was ample evidence to support the conclusion that these computer applications enhanced length and quality of compositions; increased student self-esteem; enhanced, helped students organize their thoughts via storyboarding; and got good overall reaction from the students. (BEW)

The Impact Of Integrating Visuals In An Elementary Creative Writing Process

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"... and what is the use of a book," thought Alice, "without pictures..."
– Lewis Carroll *Alice's Adventures in Wonderland*

Background

Consistent with Alice's lament, most children's books are filled with pictures. In fact story illustrations take up more space in children's books than words. When reading to children, teachers often spend time with students exploring and interpreting story illustrations. Yet when schools design curricula to teach writing, they often ignore the role of visual images in the writing process.

Historically methods for teaching writing have focused on text (verbal information) to stimulate story ideas and progress. Brainstorming and story webbing, for example, are pre-writing activities that traditionally call on verbal skills to organize a student's thoughts and ideas. Traditional models for teaching writing relied on a teacher's presentation of verbal information, student processing or writing, and teacher evaluation of results.

In 1983, Graves introduced a landmark study and writing curriculum in *Writing: Teachers and Children at Work* (1983). In his work, Graves proposed that teachers employ a process approach when teaching writing. His model supports the "natural" development of writing and expression that occurs in children. Graves presented the key steps in the writing process to include brainstorming, webbing, drafting, editing, and publishing. Graves also strongly supported student-student conferencing and teacher-student conferencing as essential events in the writing process. Since its introduction, many elementary writing teachers have adopted Graves' model.

Visuals in the Writing Process

There is little documented in the literature on the benefits or applications of visuals in the writing process. Research that does exist supports student illustration once the writing is completed. For example, the publishing stage of writers workshop (Graves, 1983) and programs such as "Young Authors" promote the use of visual images to enhance the story, yet they do not place any emphasis on the use of visuals in the *process* of writing.

In some cases, visuals have been used as a story stimulus. (See for example, Darlington, 1992). In such cases, a pre-selected image is presented to students as a means to generate writing ideas, evoke emotional expression, or reinforce descriptive writing techniques.

Surprisingly, the integration of writing and visuals is most often found in the science curriculum, where the combined use of sketching and note-taking is promoted as an observation tool (Srulowitz, 1992).

Technology and Writing

Computers and other media have been used to support the writing process. In most cases, these tools have focused on text and editing support, such as word processors and outliners. Bailey (1995), however, makes a case for using visually rich presentation software (such as Persuasion, Compel or PowerPoint) as a creative tool in the elementary classroom. Creative writing is one of many suggested applications for presentation software in the elementary classroom.

Research Questions

This study was designed to measure the effects of the introduction of visual images, specifically computer clip art and graphic presentation software, throughout the writing process. Data was collected in two main areas: student motivation and reactions to the process, and quality/quantity of work produced.

1. Will the use of visuals (clip art) in the story writing process (webbing, drafting and editing) have an effect on the length and quality of student compositions?
2. Will the use of visuals in the story writing process have an effect on student motivation or esteem?
3. Will storyboarding impact the student's ability to organize thoughts into paragraphs?
4. How will students react to the use of computer presentation software to assemble and share compositions?

Method

Twenty-five second graders were the subject group for this study. The class was composed of 11 girls and 14 boys. The students were predominantly middle class Caucasian with one Korean. There was also one special needs student who was mainstreamed into the class. All of the students participated in the study.

The students had been working on writing skills since the beginning of the school year during a daily morning session called "writing workshop". Since this project began in April, late in the school year, an established set of writing rules and process techniques, based on Graves' (1983) process writing, had already been introduced and had been practiced through the development of approximately four prior themes.

Introducing the Project

The project began with a brief introduction to the students. During this time, the main features of this workshop were established. The students were told they would be writing a theme that included *both* words and pictures. The writing process would use the same steps as prior workshops. Critical new terms including "clipart" and "storyboard" were defined. In addition, students were introduced to the technology that would be used for the project, the pieces of hardware needed (computer, overhead projector and projection panel) and a special program, *Microsoft PowerPoint 3.0*, which would allow them to enter words and clipart together into the computer. To conclude the introduction,

students viewed an example theme developed in *PowerPoint* by one of the researchers. The theme was shared using a Macintosh LC II computer. Students' questions during the introduction centered on understanding the technology and the new tools such as, "How do clipart (images) get into the computer?" and "Can we draw pictures on the storyboards?" The following steps were taken by the students over a four week period.

(1) Brainstorming. Copies of pre-selected computer clipart images (approximately 89 black and white images on four pages) were passed out to each student. Students worked with a writing partner to brainstorm theme ideas.

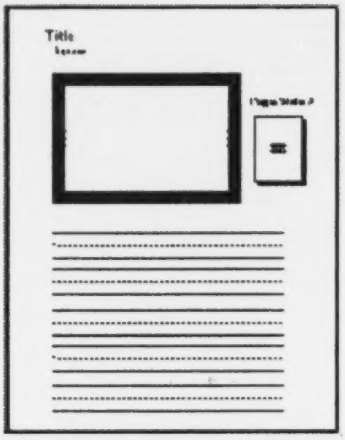
(2) Webbing. Once each student had decided on a theme, he or she began to draft a story web. Students wrote words or phrases, and placed images which explained and elaborated on their ideas on the web. Most students cut out and pasted their clip art choices directly to the story webs.

(3) Drafting. Students used storyboards as a tool to support the writing of their first drafts. Storyboards provided a place for both pictures and words. (See Figure 1.)

(4) Editing. Editing was done in peer groups, independently with the classroom teacher, and in daily sharing sessions. In the sharing sessions, students volunteered to read drafts while other students asked questions and gave feedback.

(5) Publishing. Once students had completed their editing and had approval from the teacher to proceed, students moved to the computer to publish their theme. Students worked with one of the researchers at a Macintosh LC II

Figure 1
STORYBOARD TEMPLATE CREATED WITH POWERPOINT 3.0



computer loaded with PowerPoint, the clipart, and the pre-created template to match the students' storyboards. Students directed the selection of background, placement and sizing of clipart, and the typing in of text. At the end of this stage, students were provided with a color printout of their theme.

(6) Presenting. All students had the opportunity to share their theme with classmates using the computer and PC projection equipment. During this presentation, each student read his or her theme from the printout while the computer generated graphics were projected on a cardboard "screen" suspended from the ceiling.

Data Collection

Data was collected over a four week period allowing the observers to be present for all of the stages in the writing process. Sources of information included observation notes, informal interviews with students, a final group debrief, teacher interviews, and document

analysis-assessment of final writing by the teacher and researchers.

Findings

Observations of student reactions and behaviors during this writing workshop can be classified as being related to three key areas: (1) reactions to the *integration of visuals into the process*, to include strategies and approaches employed during the process and the resulting quality, and length of writing reflected in the themes generated from the process; (2) reactions to the *technology*, to include perceptions of the computer as a novelty in a pre-existing process and as a visually rich tool for accomplishing a familiar task; and (3) evidence of students' *motivation and esteem* during and as a result of the process.

Four Strategies for Visual Integration

It was apparent from very early in the observation that a handful of distinct styles were prevailing as strategies for integrating visuals into the writing process. This section demonstrates the four strategies we feel were consistently represented in this subject group based on notes taken during field observations and analysis of process documents including the writing webs, storyboards and final themes: (1) Visual Relationship, (2) Visual Organization, (3) Visual Sequencing, and (4) Trial and Error or Visual Testing. Pseudonyms are used to refer to the students.

Visual Relationship

The first example illustrates a Visual Relationship strategy, and describes Kimberly, a student with already well developed writing skills as demonstrated in earlier writing assignments. Kimberly's strategy for integrating visuals centered on looking across the set of clipart to identify relationships among the images. Once a conceptual relationship was identified, the student elaborated on the central idea, and the theme was organized to explain this relationship.

Example 1 - Visual Relationship. Kimberly teamed up with Susan to look over the clipart images. They talked and started picking out images that were "funny", "cute" and "cool". It only took 5-7 minutes before Kimberly was ready to start a story web. She was able to recognize that some of the images were "realistic" and some were "cartoons." "The funny pictures made me think about being a cartoonist and making people laugh," she said. In the center of her web she wrote, "Being a cartoonist" and developed six branches. She pasted nine images cut from the clipart. The images were grouped in clusters. One cluster included a lion and a duck. Another included two cartoon dog images. A cat and fish were grouped together, as were a comical squirrel and bird. A solo image of a cartoon baby was pasted alone. Kimberly added sentences to her web to explain her groupings. The sentences centered on liking to draw "dogs" and "animals." One branch of the web included a rather poetic line that read, "I like to watch squirrels and birds dance among the trees." Even though the line didn't make it apparent, Kimberly said she was trying to explain how she got her ideas for drawing.

Kimberly spent no more than one class session on her web, and was one of the first to move to storyboarding. Instead of developing each web branch into a single storyboard page, Kimberly grouped her ideas to fit three storyboards to support her explanations. She pasted the images on first, adding a new tenth image of a cartoon clock, and began adding the words to her rough draft. She restricted herself to the number of lines available on the storyboard, feeling "finished" when she reached the end of the page. She worked very quickly, and made very few spelling or punctuation errors. She

stuck to simple words and simple sentence structure.

The words and images included on Kimberly's final presentation bore striking similarity and consistency with her web. Very little changed in the final editing, or in publishing the theme with the computer. No additional brainstorms, or last minute changes were made during the computer time. Kimberly's final theme reflected ten images and nine sentences (a total of 74 words.)

Visual Organization

The second example demonstrates a Visual Organization approach to the writing. In this example, Brian used the visuals as icons to represent the structure and development of his theme. This approach involves using a single clipart image to "represent" a whole subset of ideas on the web and/or storyboard. Brian was an extreme example of visual organization, relying *completely* on the visuals to represent his theme's conceptual outline. In fact, he included *no words* on his web at all.

Example 2 - Visual Organization. Brian and Kevin sat down with the clipart and started naming the pictures. While Kevin centered on the shark, Brian couldn't decide on just one animal as his favorite. He began cutting out the ones he liked: the shark, a horse and a tiger. He pasted them on a web, each with its own branch. In the center of the web, he pasted the image of a globe. He put no words on the web at all. His teacher asked him to explain his theme. He indicated that he was going to write about animals around the world, and the three animals on the web were the ones he would talk about. He would tell where they live and what they eat.

Brian went straight to developing his storyboards to rough out his theme. He took five storyboard pages and numbered them 1-5, pasting the globe on first, the shark on second, and so on. He began writing, looking up some information in the encyclopedia, and he developed 1-3 sentences for each storyboard. He didn't feel restricted by the lines on the storyboards, naturally continuing on the back of the page as he wanted to add more information on each animal. Brian took risks with his vocabulary, including "information," "enemies," and "dangerous" to his draft.

Brian finalized his theme by adding a sentence to his introduction about where he found the information to his theme, and a short sentence as a conclusion. His final theme included only four images, but used 14 sentences (a total of 120 words) to elaborate and explain them.

Visual Sequencing

The third example demonstrates a Visual Sequencing approach to the writing. In this example, the clipart triggered a visual memory in Jeremy which compelled him to retell a story based on the "re-playing" of a visual sequence in Jeremy's mind. In Jeremy's case, it was a television show that formed the basis of his theme. Since Jeremy was relying on his visual memory to structure the theme, the clipart was used extensively as a planning tool to map his memory on the story web, but was thrown out during storyboarding, presumably because the clipart images could not match the richer images in the child's mind.

Example 3 - Visual Sequencing. Jeremy was a "loner" during the project, working very diligently the entire four weeks. When he first received the clipart and started talking with Sam, he centered right away on pictures of a sports car and police car. "These are cool." He took his paper and wrote "Viper" in the center. He started cutting out several images, one at a time. With each, he would paste the image, then write a single word. With a skyscape, he wrote "city." With a doctor, he wrote "crash." With a skeleton, he wrote "bad guy." He then added the "police car" and wrote "transform" by the sports car. In all, his web reflected eight

images and nine words. He explained to his teacher that the images reminded him of a television show he had seen and he was going to write a story based on the show.

Once Jeremy had his story idea and his web completed, he abandoned the clipart images and began retelling the story on the storyboards. He would start each page with an illustration at the top, and then would fill each page with appropriate words and dialogue. It was as if he treated the box provided for pasting the images as a TV or movie screen. He took risks with his sentence structure, including dialogue and compound sentences. He took risks with vocabulary, too, including words such as "Chicago", "memory", "special", "bazooka", "alley" and "transform". He seemed anxious to finish his story. But he didn't feel like he could finish until the whole story was told as he remembered it. Finally, after 22 storyboard pages, his teacher convinced him to write a story ending.

Jeremy was one of the last to publish his story on the computer. It was a bit frustrating at first trying to find clipart images to match Jeremy's illustrations. Five of the original clipart images were used from Jeremy's web in the final presentation. Many were used over and over.

Jeremy's final theme included 15 different images, 63 sentences with a total of 558 words.

Visual Testing--Trial and Error

The fourth example demonstrates that not all students experienced a clear goal-directed strategy with the visuals. Some students struggled with visual integration and demonstrated what we call Visual Testing or Trial and Error in developing their themes. Missy is a good example of Visual Testing. In this approach, there were many starts and stops with selecting and integrating visuals into the theme. For some students, it can be compared to trying on shoes. The student centers on one or several images to start, develops the theme to a certain point, discovers new idea strands either stimulated by a thought or a new image, throws out visuals that no longer reflect the story's direction, and brings in new, more appropriate ones, all in an evolutionary trial and error process. This is in great contrast to the goal-directed behavior of the Visual Organizer or Visual Sequencer.

Example 4 - Visual Testing. When Missy received her clipart, she seemed overwhelmed by how many there were. She listened to her partner and the other kids around her to find out what they were doing. While other kids were deciding quickly, Missy seemed to have some trouble coming up with an idea. There were so many pictures that she liked. She asked the teacher, "Does this story have to be real?" (Most of their themes so far were information themes about themselves, Thanksgiving, interests and so forth.) "No. You can tell us a story or give us information about something. If you tell a story, though, remember all stories have a problem to be solved, a beginning, a middle and an end."

Missy wanted to tell a story and started her web by writing "The Dancing Bear" in the middle. She added a few words to the web including "room", "dances", "loved", "toys" and "best friends". Even though her story didn't have a problem yet, she started her rough draft/storyboard. She started by writing the limerick of Fuzzy Wuzzy, but threw this out and started over. It was the third class period that Missy really started developing her story. She began with an image of a house on storyboard one, and started writing. She didn't look back to her web at all. She used simple sentence structure, and made many spelling errors. But she kept going. On the second page, she pasted an image of a bear, and in the story named him "Fuzzy." She introduced six more images on page three, adding six more characters to her story. The action of the story was simple and occurred on pages 4 through 6. Even though her original web

indicated there would be a dancing bear, this element was never introduced in her storyboard. It took Missy several class periods to complete her story. She made many changes, crossed out words, and added new sentences. She added new images, at times hand drawing when the "right" clipart was not available.

She worked most of one class period (about 40 minutes) to organize the story, select images for two storyboards that were left blank, and re-work the sentences to get the story into the computer with the help of one of the researchers.

Missy's final presentation used 10 images accompanied by 15 sentences with a total of 117 words.

These examples show at least four very distinct strategies used by the students in order to integrate visuals and text into a single cohesive theme. As evidenced by their final themes, this task was completed successfully, albeit perhaps easier for some. In all but two cases, when compared with writing samples earlier in the year, themes reflected risks used in the form of advanced vocabulary words and sentence structure, fewer misspellings, and longer length. Figure 2 compares the document analysis figures for the four students described in this paper.

Figure 2
EARLY WRITING VS. FINAL THEMES

Student	Early Writing			Final Themes: Visuals + Text				
	Words	Sent.	Misspell	Words	Sent.	Misspell	# Slides	# Clipart
Kim	96	13	0	74	9	0	3	10
Brian	53	6	6	120	14	0	5	4
Jeremy	90	14	2	558	63	1	23	15
Missy	117	15	3	143	25	0	7	10

Impact of Computer Technology

The technology, specifically the Macintosh computer with PowerPoint software used during the publishing stage of writing and the computer and projection equipment used for story sharing, did have some affect on the students' strategies and behaviors during the project.

While a computer in the classroom was not a novelty to this group (the students have access to an Apple IIgs for practice and enrichment), the introduction of a color computer with visual graphic software was a novelty. Further, it was a new experience for this group to use computers during the writing process.

Technology's Impact on Process

Since we brought in the computer on a wheeled cart at the beginning of each writing workshop, it was hard for students not to "notice" it. One or two students, like Jeremy, were able to shut out the anticipation of using the computer for final draft and remain very focused. However, a large number of the students, such as Kimberly, were obviously anxious to look, feel and experience the computer. We often observed students taking a break from their work to watch the interaction between researcher and student at the computer or to catch a glimpse at the colorful graphics other

students were putting into their presentations.

For Kimberly, this eagerness was manifested in her writing by doing things "just well enough" so that she could be approved to advance quickly through the early writing steps and be the first to enter her final draft. For Kimberly, the results of this eagerness were a shorter paper than earlier writing (74 words versus 96 in an earlier sample) and less risky vocabulary use and sentence structure.

Conversely, for most students, the computer's presence kept anticipation and energy high during steps in the writing process that typically become slow and mundane: editing and final draft. It is during this stage that students can become frustrated with their level of development with vocabulary, spelling and handwriting. In this project, while there was some of this same frustration during drafting and editing, we also observed students getting down to task and persistence so they would be chosen next to work at the computer.

Presenting with Technology

During presentation days, 4-6 students took turns reading their themes to classmates while the graphics were projected by the computer. During these "presentations" the students in the audience consistently maintained their focus on the projected computer graphics and rarely looked at the student reading. At the end of the presentations, students still working in editing were observed with a renewed interest in finishing their own themes.

In the final debrief, some students noted that they were anxious (and often excited) in anticipating sharing their themes to the class, but when the audience looked at the graphics instead of them, it made it much easier to present.

The technology's impact is apparent in students' final reaction to the writing workshop as expressed in the final debrief. Figure 3 reflects students' blind votes for their favorite step in this project, and it clearly shows a preference for the two steps that introduced technology.

Figure 3
STUDENTS' FAVORITE STEP OF THE WRITING PROJECT

Step	# Votes (Blind Voting)
Brainstorming	0
Webbing	0
Storyboarding	1
Editing	0
Final (Computer)	16
Presenting	7

Student Motivation and Esteem

Most affects to student motivation and esteem were observed during three of the writing steps: brainstorming, publishing, and presenting.

Brainstorming. During brainstorming, giddiness and anticipation that filled the room. Students were overheard sharing common sentiments about how the project was "fun" or "cool." On the first day observation, through lively, busy interaction, about half of the students determined a theme topic within 5-7 minutes; only six were still looking for a topic after 11 minutes; four after 15 minutes; and all had selected a topic within 18 minutes from receiving the clipart.

Publishing. As noted earlier, the time students spent sitting at the computer

to develop the final draft was a source of motivation for many students. Students were observed laughing, interacting, and smiling during the time with the researcher at the computer. A significant event for many students occurred when they received the color printout of their themes at the end of this time. An example of one student's enthusiasm during this time was Brian (the visual organizer). Brian's time at the computer was interrupted by the bell for lunch. We had two more slides yet to enter. Brian requested that he be allowed to stay during lunch, or come back during recess, so that he could finish his theme and receive his printout.

Some students expressed feeling nervous or confused during the time leading up to sitting down with the computer. One student explained, "I was nervous. It was different having to work with someone else to do the final draft." By and large, however, comments were positive, "It was exciting." or "I thought it was funny watching (the researchers) move the pictures around."

At the end of this debrief, 17 students voted that they love to write; 6 that they liked it. None indicated that writing was OK or that they disliked it.

Discussion

This research represents an initial step in answering four questions as they relate to visual integration into an elementary creative writing process.

Will visuals in the story writing process have an effect on length and quality?

There is evidence that the integration of visuals into the process had positive affects on the length and quality of student compositions. The introduction of visuals during brainstorming facilitated students' ability to quickly choose a theme and begin the process of writing. Using visuals during webbing and rough draft provided a means for students to structure ideas, either through visual organization, sequencing, relationship or trial and error.

The majority of students' final themes reflected longer length, and greater risks taken with vocabulary, dialogue, and sentence structure.

Will visuals effect motivation or esteem?

Although students expressed some initial anxiety over their interaction with the technology, there seemed to be no lasting effects from this fear.

Motivation effects were observed during brainstorming, publishing and presenting. In addition, the anticipation to publish on the computer spurred many students to complete themes and remain on task. The pride students experienced with the color, visual printouts of their themes, and the ability to share both text and visuals with classmates, was deep and expressed openly. In their own words, students found this writing workshop "fun".

Will storyboarding impact student ability to organize?

The storyboards were a very useful tool for students in integrating text and visuals into student compositions. While the story web was observed as the primary tool supporting theme organization, the storyboard was useful in *maintaining* and *elaborating* on that organization through rough draft and editing.

Particularly for the Visual Organizer and the Visual Sequencer, the

tool was excellent support for the grouping of ideas, a first step in helping students understand paragraphing. Even if classrooms are not equipped with computers or graphic software, introducing visuals and storyboards into the writing process as a tool for grouping ideas and paragraphing can be highly effective.

Student reaction to computers as a visual-text integration tool?

This research is indication that presentation software can be used as a educational tool to support visual and text integration with young children, and is not an exclusive software genre for supporting presentations in adults.

Computers can be seen as creative tools for children...not just a way to edit text or to conduct drill and practice. Similar to the benefits of Logo in the early 1980s for allowing children to direct and control the results on the computer screen, so can graphics programs and presentation software be seen as an avenue for student creativity and esteem.

Questions for further research and analysis....

While this research represents a step toward the study of integrating visuals and visual technologies into the elementary creative writing process, additional questions and further research is required. Specifically, do the four strategies described here for visual-text integration emerge consistently, or are there additional integration strategies that we did not observe?

Would the introduction of visuals/ technologies have similar impact on students of different ages and stages of writing development than our test group?

Conclusion

The writing workshop described in this study was a positive curriculum approach to integrating verbal and visual information into young student's development of writing skills. It was a project that provided rich observation, addressed specific questions regarding visuals and writing, and identified additional research needs. Most importantly, though, it provided the students involved with a lasting, professional-looking theme with color illustrations. For them it became more than a writing assignment, it became a source of creative pride, providing for them, in their words, "a keeper."

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